REPORT

ON THE

CAWNPORE EXPERIMENTAL STATION

FOR THE KHARIF SEASON OF 1887.

ALLAHABAD:

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DEPARTMENT OF LAND RECORDS AND AGRICULTURE, N.-W. P. AND OUDH.

DATED CAWNPORE, THE 23RD JUNE, 1888.

FROM

LIEUT.-COL. D. G. PITCHER,

OFFG. DIR. OF LAND RECORDS AND AGRICULTURE,

N.-W. PROVINCES AND OUDH,

TO

THE CHIEF SECRETARY TO GOVERNMENT,

N.-W. PROVINCES AND OUDH.

SIR,

I HAVE the honor to submit, for the information of His Honor the Lieutenant-Governor and Chief Commissioner, the kharíf report of the Cawnpore experimental station for the year 1887-88.

2. The season was again for the third year in succession most unfavourable for ordinary farming, and as experimental farming requires that for reliable results the season shall be at least an average one, it is not surprising to find that the results at Cawnpore were, on the whole, somewhat negative. The unfavourable nature of the past season has been brought home to us all as one of the causes operating to maintain prices at so high a rate throughout the cold season.

3. Experiments were confined to plots of maize, indigo, cotton, and sugarcane. To maize and cotton various fertilizers were applied, the best of which proved to be woollen refuse followed by sheep's dung. Other experiments in early sowing gave somewhat negative results, and the same is reported of the regular series of standard manure plots, of application of gypsum and kainite and of sowing after the American fashion as compared with other methods. In all these the bad weather levelled distinctions.

4. Gypsum was applied to indigo with some better results, indigo being, it may be remarked, leguminous. These experiments, which will be continued on a larger scale next year, may prove of great importance, should gypsum be found to possess any markedly good effect on the plant. Large deposits of gypsum are available at Kheora, in the Punjáb, close to the North-Western Railway. Through the kindness of the Agents, East Indian Railway and North-West Railway, a considerable quantity was procured from thence, some of which has been distributed for experiment to indigo-growers. "Land plaster," as it is called in America, is there considered the most valuable application for all leguminous crops.

5. For sugarcane alone was the season favourable and the experiments there were more satisfactory. The cane grown was very fair indeed, and the results proved so far that the method of cultivating ordinarily adopted here suits the conditions of climate, &c., far better than the West Indian plan of growing in lines. In the latter case the plan is designed for a climate where rain falls on most days of the year ; the canes must, therefore, be grown well apart to secure the full benefit of the falls. In India the water is delivered by artificial irrigation channels direct to the foot of the cane, and a close growth overhead minimises loss of moisture by evaporation in the intervals between irrigation. The two plans were tried some years back at the farm and the same result in favour of the native method obtained.

So, also, I must observe in regard to ratooning cotton that the merits and demerits had previously been exhaustively experimented on. The most to be looked for in later experiments now is the improvement of seed by selection, and to this the Superintendent's attention will be directed.

The report closes with an account of various trials of implements the results of which speak for themselves.

6. I must apologise for the late appearance of the report. It is nominally due in December—an impossible date for any year in which cotton or sugarcane is grown. This year the operations connected with those two crops were not concluded until towards the end of March, when the Assistant Director has his hands too full of agricultural show work and the rabi harvest to be able to expedite his report. I venture, then, to take this opportunity of suggesting that the Government of India be moved to consent to a separate kharif report being discontinued and to one annual report being submitted for the station by the date now fixed for the submission of the rabi report.

I have the honor to be,

SIR,

Your most obedient servant,

D. G. PITCHER, LT.-COL.,

Offg. Director.

REPORT

ON THE

CAWNPORE EXPERIMENTAL STATION,

FOR THE KHARIF SEASON OF 1887.

PART I.

Experiments on Crops.

BESIDES the experiments on the usual kharif crops, indigo and sugarcane were included this season. The milling of sugarcane went on up to the 5th, and cotton-picking up to the 15th of March : hence delay in submission of this report.

I., Determination of the effect of various fertilizers on maize.—From statement I it will be seen that woollen refuse (shoddy) has this year again taken the leading place and has given 1,670lb. per acre more grain than the unmanured plot, leaving a profit of Rs. 11-2-0 over and above the usual profit per acre.

Sheep dung and pigs' dropping too have given a profitable yield, but saltpetre has shown uncommonly bad result : it may be said that in too wet a season, as of the last kharif, it is of no avail.

II., Determination of the effect of early and late sowing on maize.—Against early sowing the plot sown in ordinary time has produced 76lb. per acre more grain *vide* statement No. II. ; the difference is, however, not much and not worth taking into consideration. The loss, as shown by the statement, may be attributed to the bad season which at Cawnpore had been throughout unfavourable for the crop. The other experiments on maize, such as sowing on flat and ridges after the American way, and those connected with gypsum and kainite started this year and various kinds of dungs which are tried in duplicate series every year, were so much injured by the heavy and continuous rain that they hardly gave any yield worth noting.

III, Determination of the quality and yield of different varieties of foreign cotton from acclimatized seed.—Cotton of two varieties, (1) Louisiana and (2) Egyptian, was tried under the same treatment ; each was sown in two series, (1) before and (2) after rain. For the seed sown before rain the fields were prepared and till monsoon time protected by irrigation. Statement III shows result. The produce of early-sown plots was greater than those sown late. In either case the variety called Egyptian has proved to be better for our soil and climate than the other. The proportion of lint to the total weight of seed-cotton is also higher in this variety.

From a financial point of view the result was very poor, which is no doubt due to bad season : heavy rain is always injurious to a cotton crop.

IV., Determination of the effect of gypsum and kainite on cotton and comparison of the yield of American against country variety.—In two plots country cotton and in other two with the same treatment New Orleans was sown. Statement IV gives details. In both cases the yield with gypsum and kainite has been greater than otherwise. The produce of New Orleans was 145lb. clean cotton per acre and of country cotton 121lb.

The financial condition of this experiment is also not favourable.

V., Experiments with Nankin cotton.—The points aimed at in these experiments were :—

(*a*) For how many years the plants will continue to bear.

(*b*) Whether the yield is equal to the annually-sown crop or not.

(*c*) Whether there is any change of colour in the produce of the annual and perennial plants.

(*d*) Whether ratooning makes any difference.

For last three years this experiment has been kept up.

With regard to (*a*), it is sufficiently proved that Nankin cotton plant is perennial and will stand and yield for several years. If kept long it thrives a good deal, becomes more bushy, and bears more pods. But compared with the fresh-sown cotton, a greater number of pods do not yield fine cotton. Experiment has also shown that longer the plant is kept the smaller the seed becomes ; thus the percentage of clean cotton on seed increases.

With regard to (*b*), owing to the unfairness of season, nothing can decidedly be said. One of the two plots sown this year yielded per acre as much as 172lb. cleaned cotton, and the other only 40lb., while the produce of the two plots sown three years ago was 85lb. per acre in each case. Details are given in statements V and VI appended to this report.

With regard to (*c*) and (*d*), there did not appear any difference between the colour of the produce of the two kinds of plants, nor was there any difference between the results of ratooned and unratooned plants.

By summing up the result of the last three years' experiments, it may be said that there is no difference between the quantity of the produce and quality of its colour, from the annual and perennial plants : so there is a deal of saving in cost by keeping the plants for several years in field, if the land is not suitable to bear an extra crop.

VI., Early and late sowing in the case of Nankin cotton.—The statement No. VI will show the results of the two kinds of sowing. Early sown plot has given far larger yield than the other, and the percentage of cotton on seed is also better.

It is a recognised fact that early sowing of all kharif crops, especially cotton, is advantageous.

VII, Determination of the effect of gypsum on indigo.—The following figures show the result :—

No. of plot and area.	Special treatment.	Cost of special treatment.	Weight of green crop sold.	Actual outturn per acre.	Value of the outturn per acre at Re. 1 per 30lb.	*Increase or decrease.*	
						In weight.	In money after deducting the cost of manure.
			lb	lb	Rs. a. p.		Rs. a. p.
(1) 7,360 square yards.	Gypsum applied as manure, 3 cwt. per acre.	Rs. 3 per acre.	21,780	14,487	47 7 0	1,527	2 4 0
(2) 6,400 square yards.	No manure ...	...	17,138	12,960	42 3 0	...	...

Gypsum was not expected to produce its full effect in the first year : still it is satisfactory to see that it has left a net profit of Rs. 2-4-0 per acre.

VIII. Drill versus *broadcast.*—The following table gives the results of indigo sown in the two ways :—

No. and area of plots.	Special treatment.	Cost of the special treatment per acre.	Weight of green crop sold.	Outturn per acre.	Value per acre at 30*l*b. per rupee.	*Increase.*	
						In weight.	In value.
			lb.	lb.	Rs.	lbs.	Rs.
(1) 522 square yards.	Seed sown with drill.	No noticeable difference of the cost between the two ways of sowing.	5,507	7,507	24 7 0	5,462	17 13 0
(2) 4,658 square yards.	Seed sown broadcast.		2,045	2,045	6 10 0	...	...

Equal quantity of seed was sown in both cases (8½lb). There is no doubt that almost half of the seed sown broadcast, owing to its being deposited unevenly and too deep in the field is lost, and fails to germinate : still I must say the difference in the present instance is rather abnormal.

IX. Experiments with Sugarcane.—This experiment may be classed into :—

(*a*) Comparison of the foreign against the ordinary varieties of the district.

(*b*) Determination of the merits of sowing canes in lines as done in the French sugar-growing settlements, against the ordinary method followed in the country.

Statement VII shows the details.

Foreign seed was obtained from the best sugarcane-growing districts—(1) Sháhjahánpur, (2) Kanth (Moradabad), (3) Beheea (Shahabad).

Each variety was sown in two plots. All the plots were made side by side on one piece of land and received similar treatment in every respect.

The two plots of Sháhjahánpur seed were attacked by parasite and one of them was almost entirely destroyed, although every possible effort was made to save it. A mixture of kerosine-oil and sulphate of copper was applied, the attacked and injured canes were dug out with roots and thrown away, an extra digging and watering were given : but all to no effect.

The other two varieties did better, but did not come up to the mark. This proves that either the vitality of seed was affected during the transit or that it did not adapt itself to its new home and might do better in the next year or so—a question which will be decided by future trials.

In every case sowing after country fashion gave much better results. There was no perceptible difference in the quality of the *gúr* made from plants raised in the two ways.

PART II.

Trial of machines and implements.

Sugar-mills.

(1) *The "Rája" sugar-mill.*—This is patented by Mr. J. Rogers of Cawnpore; was shown in several shows; and much admired by mill-owners. Its price is Rs. 120. On the 3rd of March it was tried on the farm in Mr. Rogers' presence with the following result:—

No. of trial.	Length of beam.	Tension in number of stones.		Variety of cane crushed.	Weight of cane pressed.	Duration during which the mill worked.	Revolutions.	Weight of juice expressed.	Percentage of juice on the weight of cane crushed.	Weight of cane crushed per hour.
		Without cane.	With cane.							
					Seers.	Mins.		S. c.		S. c.
1st ...	9′ 3″	4	12	Dhaul,	55	65	113	23 5¼	42·4	50 12
2nd ...	9′ 3″	4	12	Do.,	55	57	141	26 6¼	48·0	57 14
Average,	...	...	...	...	...	61	127	24 14	45·3	54 5

N.B.—The weight of juice given above is the net amount after deducting the weight of mogas particles held in the juice.

(2) *Nahan sugar-mill.*—Three of these—(1) 6-inch two roller; (2) 8-inch three roller, double squeeze; (3) 8-inch three roller, double feed—were shown in Moradabad, and on the 3rd of March were tried at the Cawnpore experimental station in presence of Mr. Jones, the patentee. No. (2) was shown at Muttra and Meerut and drew considerable attention of the sugarcane-planters. The following figures show the results:—

Description of mill.	Price.	Length of beam.	Tension in number of stones.		Variety of cane crushed.	Weight of cane pressed.	Duration during which the mill worked.	Revolutions.	Weight of juice expressed.	Percentage of juice on the weight of cane crushed.	Weight of cane crushed per hour.
			Without cane.	With cane.							
	Rs.					Seers.	Mds.		Seers.		S. c.
Nahan, 8-ich double feed three-roller mill.	90	10′ 0″	¼	14¼	Dhaul,	55	39	103	26	47·27	84 9
Nahan 6-inch two-roller mill.	60	9′ 2″	2	8	Do.	55	57	157	22	40	57 14

Sugar-refiner.

(3) *Centrifugal or sugar-refining-machine*, introduced by Messrs. Thomson and Mylne, of Behcea, was tried again during the year. The results are as follows:—

Number of trial.	Quantity of ráb worked.	Time occupied.	Quantity of refined sugar.	Remarks.
	Mds. s.	Hour. mins.	S. c.	
1 ...	0 30	0 13	4 3	Very white and fine.
2 ...	0 23	0 10	1 4	Ditto.
3 ...	0 36	0 21	11 0	Yellowish colour.
4 ...	0 32	0 13	7 4	Ditto.
5 ...	0 31¼	0 17	7 6	Whitish colour.
6 ...	0 19	0 19	6 2	Very yellow.
Total ...	4 11¼	1 33	37 3	

The ráb was made in February, 1887; two of the Beheea men were sent for and employed to make it. The machine at the station was sent out to be exhibited at the various agricultural shows of the provinces, and so a second machine was ordered from Messrs. Thomson and Mylne; this, however, did not come, we had to wait till May, when the shows were over. The crystals in the ráb, standing long in the molasses, perhaps got broken or became very fine, and this accounts for the percentage of refined sugar on *treacle* being so very low.

In many of the shows during last February and March it was worked with great success. At Moradabad a mahájan who owns a "*khandsar*" brought his own ráb and worked it himself; the ráb was of course of first-rate quality, and he got much more sugar by this machine than by the *khanchi* process.

The machine is a great thing for capitalists, but it requires ráb of an especial kind, which though not at all difficult to make, yet is not commonly made in this country.

(4) *Flour-mills.*—The work of the flour-mills was tested again this year. The trial was made on the 5th of April last. Five seers of well-dried wheat were given to each mill (three) under trial. The result stands thus:— Flour-mills.

Name of the mill.	Quantity of grain given.	Labour applied.	Time occupied in the work.	*Produce.*		
				Flour.	Bran.	Loss.
	Seers.		Hrs. mins.	S. c.	Chks.	Chks.
1. R. Hunt's "The Colonist" ...	5	6 men	0 49	4 9	6	1
2. Ditto "The Little Wonder."	5	2 women	1 8	4 7	8	1
3. Ali Husain's flour-mill ...	5	4 men	0 15	4 9	6	1
4. Native chakki ...	5	2 women	1 15	4 8	6	2

Nos. 1 and 2 have steel grinding plates, which soon get heated to such an extent as to spoil the quality of the flour. The great defect in these mills is that the grooves of the plates are very fine and get choked by the flour they grind, and stop grinding any more wheat: the machine thus cannot be worked with good result for more than a few minutes.

The mill No. 3 is really a native mill, but the stones are placed vertically, and are fed by a hopper placed at the top of the frame. Its revolutions are increased simply by a fly-wheel without any complicated gearing. It was shown in several shows, where many offers for its purchase were made, a *rais* at Moradabad, after watching its work for several days, took it for its fixed price of Rs. 60.

(5) *Barrakar Waterlift, 5 feet long, all parts of cast-iron.*—In 45 minutes a tank of 500 cubic feet was filled by this pump. The price of the pump is Rs. 35. It does fair work for the price, but being of cast iron is very heavy and liable to breakage. Was shown in several shows, but none sold as yet. Waterlift and pump.

(6) *The "Simplex." Waterlift.*—This is a force pump forcing water to 30 feet, its price is Rs. 98 and is worked by two men. It was shown at Meerut and was purchased by a zemindar.

(7) *The "Empire" Water-lift, hand power.*—This is patented by Mr. J. L. Houser, an American gentleman, residing in Bareilly. It resembles a *Noria*, consists of ten buckets fastened between two endless chains, which latter are worked by means of four grooved wheels, arranged on a wooden frame. In the middle of the frame is a trough which receives water from the buckets. The length of chain and number of buckets are varied according to depth of water. The distance between the two buckets of the

lift tried on the farm was 6½ i , the total length of chain on one side 32½ feet, the height of stand 3 feet, and the capacity of a bucket ·22 cubic feet.

In one hour and 30 minutes it filled a tank of 250 cubic feet, or lifted 166·66 cubic feet per hour; on an average it raised 13 buckets in a minute, and thus there was a loss of nearly 4 per cent. in the quantity of water raised by leakage, &c.

The lift was set to work on the 21st March and kept on working till the 4th of April; the results quoted above were recorded on the last day.

Grain separator.

(8) *Grain separator by Hind and Lund, Preston.*—This machine was run by power at 500 revolutions per minute. The sieves supplied with the machine prove to be of too large a mesh, and nearly the whole of the barley, as also the small peas (kasahri), contained in the wheat was delivered with the clean sample.

Second sieves of a smaller mesh were then fitted to the machine with the result that the bulk of the barley and small peas were separated from wheat.

In my opinion the machine will give satisfactory result if it is used to clean the class of wheat that ordinarily comes into the market containing, say, 5 to 7 per cent. of foreign grain and impurities.

Grain-threshing machine.

(9) The following threshers were tried against threshing by bullocks:—

(1) May Furth's hand thresher.

(2) Ben Reed's thresher.

(3) Shearer Brothers' hand and foot thresher.

No. (1) was worked by hand, the other two were worked conjointly by bullock power. Their results are noted in the following table:—

Number.	Name of machine.	Weight of sheaves threshed.	Outturn.			Time occupied.	No. of women employed at one anna and six pie per day.	No. of bullocks employed at 12 annas a pair per day.	Total cost.	Cost per maund of clean grain.	Cost per hundred maunds of clean grain.
			Clean grain.	Chaff.	Loss.						
		Mds.	M. s. ch.	M. s. c.	S. ch.	H. m.	Women.		Rs. a. p.	A. p.	Rs. a. p.
I	May Furth's hand thresher.	10	3 16 0	6 20 0	4 0	1 30	6	...	0 3 0	0 10½	5 7 6
II	Ben Reed's and Shearer Brothers' threshers.	20	6 30 12	12 37 0	12 4	2 0	6	4	0 11 0	1 7½	7 0 6
III	Country way of threshing by bullocks.	10	3 39 0	5 30 0	11 0	19 30	1	2	1 3 6	*4 10½	30 7 6

Cost in the above table includes interest on capital, rapairs, wear and tear, wages of trained foreman, oil, &c.

The work done by machine No. I. was no doubt the cheapest of all; but the straw on examination was found to contain a large portion of unthreshed entire ears which had to be beaten out by sticks.

Butter-making apparatus.

A set of the butter-making apparatus has lately been received from England. The cream separator, which was worked both at the farm and at the shows, seems to be very efficient in its work. From pure fresh milk it turned out more than 20 per cent. of cream. The entire apparatus will, however, be given a thorough trial next cold weather and its results embodied in the next report.

MIR MUHAMMAD HUSAIN, M.R.A.C.,

Assistant Director.

*The cost for bruising chaff has been excluded, including that the total cost would be Re. 0-9-9.

STATEMENT No. I.

Maize.

No. of plots as per map of farm.	Quantity of manure applied per acre.	Calculation of the result and comparison of outturn with the standard plot in the series.								Comparison of cost and income with the ordinary kind of cultivation in vogue in this country.							
		Value of manure.	Weight of unthreshed cobs.	Weight of grain.	Weight of stalks.	Percentage of grain over stalks.	Percentage of stalks over grain.	Increase or decrease over standing plot in the series (No. 8).	Increase or decrease per acre.	*Outturn per acre.*		*Value of outturn.*			Gain or loss per acre in the cost against the cost of ordinary cultivation assumed to be Rs. 16-8-0.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs. 20.	Net profit or loss over or against the assumed income Rs. 20.
										Grain.	Stalk.	Grain at Re. 1 per 5 lb.	Stalk at Re. 1 per 48 lb.	Total.			
		Rs. a. p.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
1	Woollen refuse, 120 maunds, and lime, 12 maunds ...	6 5 0	225	150	756	20	504	+138	1,670	1,815	9,148	35 9	1 14	37 7	— 6 5	+17 7	+11 2
2	Sheep dung, 120 maunds	3 9 6	150	100	508	20	508	+ 88	1,065	1,210	6,147	23 12	1 3	24 15	— 3 9½	+ 4 5	+ 0 11½
3	Cow dung, 120 maunds	3 9 6	37	25	130	19	520	+ 13	157	302	1,573	5 15	0 5	6 4	— 3 9½	—13 12	—17 5½
4	Poudrette, 120 maunds	5 13 6	112	75	380	20	507	+ 63	752	907	4,598	17 13	0 15	18 12	— 5 13½	— 1 4	— 7 1½
5	Horse dung, 120 maunds	3 9 6	75	50	260	19	520	+ 38	460	605	3,146	11 14	0 10	12 8	— 3 9½	— 7 8	—11 1½
6	Pigs' dropping, 120 maunds	3 9 6	150	100	510	20	510	+ 88	1,065	1,210	6,171	23 12	1 5	25 1	— 3 9½	+ 5 1	+ 1 7½
7	Saltpetre, 240 lb.	10 5 0	58	38	200	19	526	+ 26	315	460	2,420	9 0	0 8	9 8	—10 5	—10 8	—20 13
8	No manure	...	19	12	70	17	583	...	...	145	847	2 13	0 3	3 0	...	—17 0	—17 0

Area of each plot 400 square yards.

STATEMENT No. II.

Maize.

No. of plots as per map of farm.	Quantity of manure applied per acre.	Calculation of the result and comparison of outturn with the standard plot in the series (*i.e.*, crop sown after rain).									Comparison of cost and income with the ordinary kind of cultivation in vogue in this country.							
		Value of manure.	Weight of unthreshed cobs.	Weight of grain.	Weight of stalks.	Weight of grain per bushel.	Percentage of grain over stalks.	Percentage of stalks over grain.	Increase or decrease over standard plot in the series.	Increase or decrease per acre.	*Outturn per acre.*		*Value of outturn.*			Gain or loss per acre in the cost against the cost of ordinary cultivation assumed to be Rs. 16-8-0.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs. 20.	Net profit or loss over or against the assumed income Rs. 20.
											Gain.	Stalk.	Grain at Re. 1 per 51 lb.	Stalk at Re. 1 per 4,812 lb.	Total.			
		Rs. a.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
38	Horse dung, 200 maunds per acre (crop sown before rain).	6 0	758	632	3,228	61	19	511	...	...	734	3,751	14 6	0 12	15 2	—6 0	—4 14	—10 14
41	Horse dung, 200 maunds per acre (crop sown after rain).	6 0	744	615	3,040	61	20	494	...	+76	810	4,004	15 14	0 13	16 11	—6 0	—3 6	—9 6

Area { No. 38, 4,165 square yards.
" 41, 3,675 ditto.

STATEMENT No. III.

Cotton—Louisiana and Egyptian.

Quantity of manure applied per acre.	Variety of cotton.	Value of manure.	Treatment.	Calculation of the result and comparison of outturn with the standard plot in the series (A).					Comparison of cost and income with the ordinary kind of cultivation in vogue in this country.							
				Weight of uncleaned cotton.	Weight of cleaned cotton.	Weight of seed.	Percentage of cotton over seed.	Percentage of seed over cotton.	*Actual outturn per acre.*		*Value of outturn.*			Gain or loss per acre in the cost against the cost of ordinary cultivation assumed to be Rs. 31.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs. 45.	Net profit or loss over or against the assumed income Rs. 45.
									Cotton.	Seed.	Cotton at Re. 1 per 5lb.	Seed at Re. 1 per 80lb.	Total.			
A.		Rs.		lb.	lb.	lb.	lb.	lb.	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs.	Rs. a.	Rs. a.
Farmyard manure 200 maunds and gypsum 2 cwt.	Louisiana	4	Sown before rain.	32	10	22	45	220	121	266	24 3	4 7	28 10	*—4	—16 6	—20 6
	Ditto	4		24	8	16	50	200	97	194	19 6	3 4	22 10	—4	—22 6	—26 6
	Egyptian	4		37	12	25	48	208	145	302	29 0	5 1	34 1	—4	—10 15	—14 15
B.																
Farmyard manure 200 maunds and gypsum 2 cwt.	Louisiana	4	Sown after rain.	32	10	22	45	220	121	266	24 3	4 7	28 10	—4	—16 6	—20 6
	Ditto	4		20	6	14	43	233	73	169	14 10	2 13	17 7	—4	—27 9	—31 9
	Egyptian	4		32	10	22	45	220	121	266	24 3	4 7	28 10	—4	—16 6	—20 6

Area of each plot 400 square yards.

		Rs.	a.	p.
*Note—(1) Value of extra 50 maunds farmyard manure	...	1	8	0
(2) Ditto gypsum 1/2 cwt.	...	2	8	0
Total	...	4	0	0

STATEMENT No. IV.

Cotton — Country and New Orleans.

Number of plots as per map of farm.	Quantity of manure applied per acre.	Variety of cotton.	Calculation of the result and comparison of outturn with the standard plot in the series (country cotton).					Comparison of cost and income with the ordinary kind of cultivation in vogue in this country.							
			Weight of uncleaned cotton.	Weight of cleaned cotton.	Weight of seed.	Percentage of cotton over seed.	Percentage of seed over cotton.	*Outturn per acre.*		*Value of outturn.*			Gain or loss per acre in the cost against the cost of ordinary cultivation assumed to be Rs. 31.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs. 45.	Net profit or loss over or against the assumed income Rs. 45.
								Cotton.	Seed.	Cotton at Re. 1 per 5lb.	Seed at Re. 1 per 60lb.	Total.			
			lb.	lb.	lb.	lb.	lb.	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
A—1	Farmyard manure, 200 maunds, Rs. 4	Country cotton ...	20	6	14	43	233	73	169	14 10	2 13	17 7	*—1 8	—27 9	—29 1
A—2	Farmyard manure, gypsum and kainite, 1 cwt each, Rs. 6 ...	Ditto ...	32	10	22	45	220	121	266	24 3	4 7	28 10	—4 0	—16 6	—20 6
B—1	Farmyard manure, 200 maunds, Rs. 4.	New Orleans ...	24	8	16	50	20	97	194	19 6	3 4	22 10	—1 8	—22 6	—23 14
B—2	Farmyard manure, gypsum and kainite, 1 cwt. each, Rs. 6 ...	Ditto ...	35	12	23	52	192	145	278	29 0	4 10	33 10	—4 0	—11 6	—15 6

Area of each plot 400 square yards.

* Note.—Value of 50 maunds farmyard manure and 1 cwt. gypsum and kainite.

STATEMENT No. V.

Cotton—Nankin, sown in 1885.

Quantity of manure applied per acre.	Value of manure.		Calculation of the result and comparison of outturn with the standard plot in the series (B).					Comparison of cost and income with the ordinary kind of cultivation in vogue in this country.							
								Outturn per acre.		*Value of outturn.*					
			Weight of uncleaned cotton.	Weight of cleaned cotton.	Weight of seed.	Percentage of cotton over seed.	Percentage of seed over cotton.	Cotton.	Seed.	Cotton at Re. 1 per 5 lb.	Seed at Re. 1 per 60 lb.	Total.	Gain or loss per acre in the cost against the cost of ordinary cultivation assumed to be Rs. 31.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs. 45.	Net profit or loss over or against the assumed income, Rs. 45.
A.			lb.	lb.	lb.	lb.	lb.	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
Manured with farmyard manure, 200 maunds, per acre.	Rs. 3 per 100 mds.,	Ratooned portion ...	52	14	38	37	271	85	229	17 0	3 13	20 13	*+7 14	—24 13	—16 15
B.															
Manured with farmyard manure, 200 maunds, per acre.	Rs. 3 per 100 mds.,	Unratooned portion,	51	14	38	37	271	85	229	17 0	3 13	20 13	+7 14	—24 13	—16 15

Area of each plot 800 square yards.

NOTE.—(1) Saving by no ploughing ... Rs. a. p. 1 10 0
(2) „ „ seed ... 0 4 0
(3) „ „ weeding ... 7 8 0
Total ... 9 6 0

Extra charge.—Value of extra manure, 50 maunds ... Rs. a. p. 1 8 0
*Net gain 7 14 0
Total ... 9 6 0

STATEMENT No. VI.

Cotton—Nankin, sown in 1887.

Quantity of manure applied per acre.	Calculation of the result and comparison of outturn with the standard plot in the series (B).						Comparison of cost and income with the ordinary kind of cultivation in vogue in this country							
							Outturn per acre.		*Value of outturn.*					
	Special treatment.	Weight of uncleaned cotton	Weight of cleaned cotton	Weight of seed	Percentage of cotton over seed.	Percentage of seed over cotton.	Cotton.	Seed.	Cotton at Re. 1 per 5 lb.	Seed at Re 1 per 90 lb.	Total.	Gain or loss per acre in the cost against the cost of ordinary cultivation assumed to be Rs. 31.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs 45.	Net profit or loss over or against the assumed income Rs. 45.
		lb.	lb	lb	lb	lb	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs a.	Rs. a.	Rs a.
A.														
Farmyard manure, 200 maunds	Nankin cotton sown before rain	164	43	120	35	279	172	480	34 6	8 0	42 6	*—1 8	—2 10	—4 2
B														
Farmyard manure, 200 maunds	Nankin cotton sown after rain.	40	10	30	33	300	40	120	8 0	2 0	10 0	—1 8	—35 0	—36 8

Area of each plot, 1,210 square yards

*Note.—Value of 50 maunds farmyard manure applied more.

STATEMENT No. VII.

Sugarcane.

Treatment.	Calculation of the result and comparison of outturn with the standard plot in the series (the last plot).								Comparison of cost and income with the ordinary kind of cultivation in vogue in this country.					
	Area in square yards.	Weight of cane.	Weight of juice.	Weight of rás or gúr.	Percentage of juice over rás.	Percentage of rás over juice.	Increase or decrease over indigenous way of sowing.	Increase or decrease per acre.	*Outturn per acre.* Juice.	Rás.	*Value of outturn.* *Gur* at Re. 1 per 22 lb.	Total.	Gain or loss per acre in the value of outturn against ordinary cultivation assumed to be Rs. 82.	Net profit or loss over or against the assumed income Rs. 82.
Sháhjahánpur seed (Katárá or Dekchan).		lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
(1) Sown in lines	900	976	474	120	395·0	25·32	367	1,985	2,549	645	29 5	29 5	—52 11	—52 11
(2) After indigenous way of sowing	900	1,862	906	252	359·5	27·81	314	1,689	4,872	1,355	61 9	61 9	—20 7	—20 7
Beheea seed (Manga or Dhaul).														
(1) Sown in lines	900	2,740	1,404	250	561·6	17·81	237	1,286	7,550	1,344	61 1	61 1	—20 15	—20 15
(2) After indigenous way of sowing	900	5,007	2,510	316	793·99	12·59	250	1,345	13,498	1,699	77 4	77 4	— 4 12	— 4 12
Moradabad seed (Baroukka).														
(1) Sown in lines	900	3,096	1,426	294	485·0	20·62	193	1,049	7,669	1,581	71 14	71 14	—10 2	—10 2
(2) After indigenous way of sowing	900	4,058	1,976	420	460·6	21·71	137	737	10,626	2,307	104 14	104 14	+22 14	+22 14
Indigenous seed (Matua).														
(1) Sown in lines	900	5,450	2,988	487	613·6	16·3	79	414	16,069	2,630	119 9	119 9	+37 9	+37 9
(2) After indigenous way of sowing	900	6,690	2,878	566	508·5	19·7	...	...	15,477	3,044	138 6	138 6	+56 6	+56 6